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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/134,478	08/14/1998	TAKAFUMI NOGUCHI	2091-0162P	8041

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EXAMINER	
ROSENDALE, MATTHEW L	

ART UNIT	PAPER NUMBER
2612	15

DATE MAILED: 03/11/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

PTO-90C (Rev. 10/03)

Office Action Summary	Application No.	Applicant(s)	
	09/134,478	NOGUCHI, TAKAFUMI	
	Examiner	Art Unit	
	Matthew L Rosendale	2612	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *02 January 2004*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-19* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,2,5,8,9,12,13 and 16-19* is/are rejected.

7)☒ Claim(s) *3,4,6,7,10,11,14 and 15* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *02 January 2003* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.

4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.

5) ☐ Notice of Informal Patent Application (PTO-152)

6) ☐ Other: _____.

DETAILED ACTION

Response to Arguments

Applicant's arguments with respect to claims 1 – 19 have been considered but are moot in view of the new ground(s) of rejection.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 1, 2, 5, 8, 9, 12, 13, and 16 – 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Van de Poel et al in view of Kim US Pat No 6,018,588.

Referring to claim 1, Van de Poel discloses a method of adjusting the brightness of an image comprising, acquiring image data and expressing each pixel value as a set of three mutually independent components and defining the brightness of each pixel based on the three components and determining a rate of pixels based on a number of pixels having a maximum brightness among all pixels and making an adjustment to the digital camera based on said rate. Van de Poel discloses a three-chip CCD configuration where each CCD had its own color filter designed to capture red, green, or blue object light (Col. 5, Lines 29 – 43). Figure 3 of Van de Poel shows a cumulative histogram plotting the density frequency of the brightness of each pixel. The region $X_1 – X_2$ shows pixels having a maximum brightness in a group of commonly

encountered brightness. If the rate of pixels in the region X_1- X_2 exceeds a predetermined rate such that the following equation is satisfied:

$$\alpha = X_{max} - X_1 / X_{max} - X_2 \text{ and } \alpha <= .875$$

Then the image is determined to be over exposed and the user can make an adjustment to the digital camera so that the image may be re-photographed properly exposed (Col. 9, Line 46 – Col. 11, Line 27 and Col. 13, Lines 43 - 55).

Van de Poel discloses a manual adjustment to adjust brightness in subsequent images and does not show that a means of automatically adjusted the current image. However, Kim teaches that it is well known to provide a pipeline processing technique to perform a brightness adjustment on a captured image. Kim discloses a method of brightness adjustment using the processing circuit in figure 5 where each acquired pixel is expressed as red, green, and blue component values and a histogram is computed for the luminous value of each pixel in the image data. A correction value for the luminous signal of each pixel is calculated and is automatically applied to the three RGB pixel components (Col. 8, Lines 41 – 57).

Therefore it would have been obvious to use the pipeline processing teachings of Kim and provide an automatic means of adjusting the current captured image instead of making the user adjust the camera for future images thereby eliminating the need for capturing multiple images and insures that a desired image can be captured without having the user recalibrate the camera to adjust brightness thereby missing an opportune photographic moment.

2. Referring to claim 2, Van de Poel discloses an image acquisition device being a digital camera 21 in figure 1 and the adjustment to image acquisition device is an exposure value at the

time of photography by the digital camera. Figure 3 of Van de Poel shows a cumulative histogram plotting the density frequency of the brightness of each pixel. The region $X_1 - X_2$ shows pixels having a maximum brightness. If the rate of pixels in the region X_1- X_2 exceeds a predetermined rate such that the following equation is satisfied:

$$\alpha = X_{max} - X_1 / X_{max} - X_2 \text{ and } \alpha <= .875$$

Then the image is determined to be over exposed and the user can make an adjustment to the digital camera so that the image may be re-photographed properly exposed (Col. 9, Line 46 – Col. 11, Line 27 and Col. 13, Lines 43 - 55).

3. Referring to claim 5, Van de Poel discloses an image acquisition device being a digital camera 21 in figure 1 and the adjustment to the pixel values of the image is a data transformation process of transforming the acquired digital image data. Instead of the user making an adjustment to correct the exposure of an image, the image data may be corrected after being captured based on the cumulative histogram shown in figure 4 where the region $X_1 - X_2$ shows pixels having a maximum brightness and the cumulative densities are remapped such that the following condition is satisfied:

$$X_S = X1, X_B = X2, X_E = X_{MAX}$$

$$X'_S, X'_B, X'_E \text{ are corrected values of } X_S, X_B, X_E$$

$$X'_S = 0, X'_B = \alpha, X'_E = X_{MAX} \text{ wherein } \alpha \text{ is in the range of } [60\% \text{ to } 95\%]$$

(Col. 11, Line 65 – Col. 13, Line 5 and Col. 13, Lines 43 - 55).

4. Referring to claim 8, Van de Poel defines brightness for an image having red, green, and blue color components to be the maximum brightness for the red, green, and blue signals at each pixel location Col. 13, Lines 43 – 55).

5. Referring to claim 9, Van de Poel discloses a digital camera 21 in figure 1 comprising an image pickup means 26 for capturing an image and expressing it in a set of three mutually independent RGB components, a brightness analyzing means for computing a histogram of the brightness of the pixel defined based on the three components for the image data acquired by the image pickup means and an exposure control means for making an adjustment to an exposure value at the time of photography on the basis of the histogram so that a rate of pixels based on a number of pixels having a maximum brightness among all pixels becomes a predetermined rate. Figure 3 of Van de Poel shows a cumulative histogram plotting the density frequency of the brightness of each pixel. The region $X_1 - X_2$ shows pixels having a maximum brightness in a group of commonly encountered brightness. If the rate of pixels in the region X_1- X_2 exceeds a predetermined rate such that the following equation is satisfied:

$$\alpha = X_{max} - X_1 / X_{max} - X_2 \text{ and } \alpha <= .875$$

Then the image is determined to be over exposed and the user can make an adjustment to the digital camera so that the image may be re-photographed properly exposed (Col. 9, Line 46 – Col. 11, Line 27 and Col. 13, Lines 43 - 55).

Van de Poel discloses a manual adjustment to adjust brightness in subsequent images and does not show that a means of automatically adjusted the current image. However, Kim teaches that it is well known to provide a pipeline processing technique to perform a brightness

adjustment on a captured image. Kim discloses a method of brightness adjustment using the processing circuit in figure 5 where each acquired pixel is expressed as red, green, and blue component values and a histogram is computed for the luminous value of each pixel in the image data. A correction value for the luminous signal of each pixel is calculated and is automatically applied to the three RGB pixel components (Col. 8, Lines 41 – 57).

Therefore it would have been obvious to use the pipeline processing teachings of Kim and provide an automatic means of adjusting the current captured image instead of making the user adjust the camera for future images thereby eliminating the need for capturing multiple images and insures that a desired image can be captured without having the user recalibrate the camera to adjust brightness thereby missing an opportune photographic moment.

6. Referring to claim 12, Van de Poel defines brightness for an image having red, green, and blue color components to be the maximum brightness for the red, green, and blue signals at each pixel location Col. 13, Lines 43 – 55).

7. Referring to claim 13, Van de Poel discloses an image processor comprising a digital camera 21 in figure 1 for capturing an image expressed as three mutually exclusive RGB components (Col. 5, Lines 29 – 43), brightness analyzing means for computing a histogram of the brightness for the pixel defined based on the three components for the digital data acquired by the data acquisition means, and a data transforming means for performing a data transformation process on the acquired digital data on the basis of the histogram so that a rate of pixel based on a number of pixels having a maximum brightness among all pixels is made a

predetermined rate. Instead of the user making an adjustment to correct the exposure of an image, the image data may be corrected after being captured based on the cumulative histogram shown in figure 4 where the region $X_1 - X_2$ shows pixels having a maximum brightness among commonly encountered brightness and the cumulative densities are remapped such that the following condition is satisfied:

$$X_S = X1,\ X_B = X2,\ X_E = X_{MAX}$$

$$X'_S,\ X'_B,\ X'_E \text{ are corrected values of } X_S,\ X_B,\ X_E$$

$$X'_S = 0,\ X'_B = \alpha,\ X'_E = X_{MAX} \text{ wherein } \alpha \text{ is in the range of } [60\% \text{ to } 95\%]$$

(Col. 11, Line 65 – Col. 13, Line 5 and Col. 13, Lines 43 - 55).

Van de Poel discloses a manual adjustment to adjust brightness in subsequent images and does not show that a means of automatically adjusted the current image. However, Kim teaches that it is well known to provide a pipeline processing technique to perform a brightness adjustment on a captured image. Kim discloses a method of brightness adjustment using the processing circuit in figure 5 where each acquired pixel is expressed as red, green, and blue component values and a histogram is computed for the luminous value of each pixel in the image data. A correction value for the luminous signal of each pixel is calculated and is automatically applied to the three RGB pixel components (Col. 8, Lines 41 – 57).

Therefore it would have been obvious to use the pipeline processing teachings of Kim and provide an automatic means of adjusting the current captured image instead of making the user adjust the camera for future images thereby eliminating the need for capturing multiple images and insures that a desired image can be captured without having the user recalibrate the camera to adjust brightness thereby missing an opportune photographic moment.

8. Referring to claim 16, Van de Poel defines brightness for an image having red, green, and blue color components to be the maximum brightness for the red, green, and blue signals at each pixel location Col. 13, Lines 43 – 55).

9. Referring to claim 17, Van de Poel discloses a method of adjusting the brightness of an image comprising, acquiring image data and expressing each pixel value as chrominance RGB values (Col. 5, Lines 29 – 43), defining the brightness of each pixel based on the chrominance RGB values, and determining a rate of pixels based on a number of pixels having a maximum brightness among all pixels and making an adjustment to the digital camera. Figure 3 of Van de Poel shows a cumulative histogram plotting the density frequency of the brightness of each pixel. The region $X_1 - X_2$ shows pixels having a maximum brightness in a group of commonly encountered brightness. If the rate of pixels in the region X_1- X_2 exceeds a predetermined rate such that the following equation is satisfied:

$$\alpha = X_{max} - X_1 / X_{max} - X_2 \text{ and } \alpha <= .875$$

Then the image is determined to be over exposed and the user can make an adjustment to the digital camera so that the image may be re-photographed properly exposed (Col. 9, Line 46 – Col. 11, Line 27 and Col. 13, Lines 43 - 55).

Van de Poel discloses a manual adjustment to adjust brightness in subsequent images and does not show that a means of automatically adjusted the current image. However, Kim teaches that it is well known to provide a pipeline processing technique to perform a brightness adjustment on a captured image. Kim discloses a method of brightness adjustment using the

processing circuit in figure 5 where each acquired pixel is expressed as red, green, and blue component values and a histogram is computed for the luminous value of each pixel in the image data. A correction value for the luminous signal of each pixel is calculated and is automatically applied to the three RGB pixel components (Col. 8, Lines 41 – 57).

Therefore it would have been obvious to use the pipeline processing teachings of Kim and provide an automatic means of adjusting the current captured image instead of making the user adjust the camera for future images thereby eliminating the need for capturing multiple images and insures that a desired image can be captured without having the user recalibrate the camera to adjust brightness thereby missing an opportune photographic moment.

10. Referring to claim 18, Van de Poel discloses a digital camera 21 in figure 1 comprising an image pickup means 26 for capturing an image and expressing it as chrominance RGB values (Col. 5, Lines 29 – 43), a brightness analyzing means for computing a histogram of the brightness of the pixel defined based on the chrominance RGB values for the image data acquired by the image pickup means and an exposure control means for making an adjustment to an exposure value at the time of photography on the basis of the histogram so that a rate of pixels based on a number of pixels having a maximum brightness among all pixels becomes a predetermined rate. Figure 3 of Van de Poel shows a cumulative histogram plotting the density frequency of the brightness of each pixel. The region $X_1 - X_2$ shows pixels having a maximum brightness in a group of commonly encountered brightness. If the rate of pixels in the region X_1-X_2 exceeds a predetermined rate such that the following equation is satisfied:

$$\alpha = X_{max} - X_1 / X_{max} - X_2 \text{ and } \alpha <= .875$$

Then the image is determined to be over exposed and the user can make an adjustment to the digital camera so that the image may be re-photographed properly exposed (Col. 9, Line 46 – Col. 11, Line 27 and Col. 13, Lines 43 - 55).

Van de Poel discloses a manual adjustment to adjust brightness in subsequent images and does not show that a means of automatically adjusted the current image. However, Kim teaches that it is well known to provide a pipeline processing technique to perform a brightness adjustment on a captured image. Kim discloses a method of brightness adjustment using the processing circuit in figure 5 where each acquired pixel is expressed as red, green, and blue component values and a histogram is computed for the luminous value of each pixel in the image data. A correction value for the luminous signal of each pixel is calculated and is automatically applied to the three RGB pixel components (Col. 8, Lines 41 – 57).

Therefore it would have been obvious to use the pipeline processing teachings of Kim and provide an automatic means of adjusting the current captured image instead of making the user adjust the camera for future images thereby eliminating the need for capturing multiple images and insures that a desired image can be captured without having the user recalibrate the camera to adjust brightness thereby missing an opportune photographic moment.

11. Referring to claim 19, Van de Poel discloses an image processor comprising a digital camera 21 in figure 1 for capturing an image expressed as chrominance RGB values (Col. 5, Lines 29 – 43), brightness analyzing means for computing a histogram of the brightness for the pixel defined based on the chrominance RGB values for the digital data acquired by the data acquisition means, and a data transforming means for performing a data transformation process

on the acquired digital data on the basis of the histogram so that a rate of pixel based on a number of pixels having a maximum brightness among all pixels is made a predetermined rate. Instead of the user making an adjustment to correct the exposure of an image, the image data may be corrected after being captured based on the cumulative histogram shown in figure 4 where the region $X_1 - X_2$ shows pixels having a maximum brightness among commonly encountered brightness and the cumulative densities are remapped such that the following condition is satisfied:

$$X_S = X1, X_B = X2, X_E = X_{MAX}$$

X'_S, X'_B, X'_E are corrected values of X_S, X_B, X_E

$X'_S = 0$, $X'_B = \alpha$, $X'_E = X_{MAX}$ wherein α is in the range of [60% to 95%]

(Col. 11, Line 65 – Col. 13, Line 5 and Col. 13, Lines 43 – 55)).

Van de Poel discloses a manual adjustment to adjust brightness in subsequent images and does not show that a means of automatically adjusted the current image. However, Kim teaches that it is well known to provide a pipeline processing technique to perform a brightness adjustment on a captured image. Kim discloses a method of brightness adjustment using the processing circuit in figure 5 where each acquired pixel is expressed as red, green, and blue component values and a histogram is computed for the luminous value of each pixel in the image data. A correction value for the luminous signal of each pixel is calculated and is automatically applied to the three RGB pixel components (Col. 8, Lines 41 – 57).

Therefore it would have been obvious to use the pipeline processing teachings of Kim and provide an automatic means of adjusting the current captured image instead of making the user adjust the camera for future images thereby eliminating the need for capturing multiple

images and insures that a desired image can be captured without having the user recalibrate the camera to adjust brightness thereby missing an opportune photographic moment.

Allowable Subject Matter

Claims 3, 4, 6, 7, 10, 11, 14, and 15 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Referring to claims 3, 6, 10, and 14, the prior art fails to teach or suggest performing the image transformation process based on the following equation:

$$(R'\ G'\ B') = k(R\ G\ B)$$

Where k is a constant determined by the rate of pixels having a maximum brightness among all pixels.

Referring to claims 4, 7, 11, and 15, the prior art fails to teach or suggest performing the image transformation process based on the following equation:

$$(R'\ G'\ B') = (R\ G\ B) + (k\ k\ k)$$

Where k is a constant determined by the rate of pixels having a maximum brightness among all pixels.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Matthew L Rosendale whose telephone number is (703) 305-4909. The examiner can normally be reached on Monday - Friday 8: 00am-4: 00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wendy Garber can be reached on (703) 305-4929. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

MLR

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